



BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

XRIN 0648-XF547

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Haines Ferry Terminal Modification Project

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; Issuance of Incidental Harassment Authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA), as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Alaska Department of Transportation and Public Facilities (ADOT&PF) to incidentally take, by Level A and/or Level B harassment, six species of marine mammals during the Haines Ferry Terminal Modification Project, Haines, Alaska.

DATES: The IHA is valid from October 1, 2018, through September 30, 2019.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Availability

An electronic copy of the IHA and supporting documents, as well as a list of the references cited in this document, may be obtained online at: www.nmfs.noaa.gov/pr/permits/incidental/construction.htm. In case of problems accessing these documents, please call the contact listed above (see **FOR FURTHER INFORMATION**

CONTACT).

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

NMFS has defined “negligible impact” in 50 CFR 216.103 as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity:

1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) causing the marine mammals to abandon or avoid hunting areas; (ii) directly displacing subsistence users; or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and

2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The MMPA states that the term “take” means to harass, hunt, capture, kill or attempt to harass, hunt, capture, or kill any marine mammal.

Except with respect to certain activities not pertinent here, the MMPA defines “harassment” as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. §§ 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our action with respect to environmental consequences on the human environment. The issuance of the IHA is consistent with categories of activities identified in categorical exclusion (CE) B4 of the Companion Manual for NOAA Administrative Order 216-6A. These activities do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude use of this categorical exclusion.

Summary of Request

On January 9, 2017, NMFS received a request from ADOT&PF for an IHA to take marine mammals incidental to the Haines Ferry Terminal Modification Project. ADOT&PF submitted a subsequent application on May 30, 2017, which we considered adequate and

complete. On August 17, 2017, ADOT&PF indicated a change to the requested effective dates in the application to accommodate a delayed construction schedule. ADOT&PF's request is for harassment only and NMFS concurs that serious injury or mortality is not expected to result from this activity. Therefore, an IHA is appropriate.

NMFS has issued an IHA to ADOT&PF authorizing the take of humpback whales (*Megaptera novaeangliae*), harbor seals (*Phoca vitulina*), harbor porpoise (*Phocoena phocoena*), and Dall's porpoise (*Phocoenoides dalli*) by Level A and Level B harassment, and an additional two species, Steller sea lion (*Eumetopias jubatus*) and killer whale (*Orcinus orca*) by Level B harassment only. Pile driving will occur for 19 days and pile removal will take 2 additional days (total of 21 days) over the course of 4 months from October 1, 2018, through September 30, 2019, but excluding March 1 through May 31, 2019. No subsequent IHA would be necessary to complete the project.

Description of Proposed Activity

We provided a description of the specified activity in our *Federal Register* notice announcing the proposed authorization (82 FR 47700; October 13, 2017). Please refer to that document; we provide only summary information here.

The Haines Ferry Terminal Modification Project involves constructing an AMHS End Berth Facility adjacent to the existing dock. The expansion is necessary because the current configuration does not allow for operation of the new Alaska Class vessels, which are expected to be operational in 2018. Activities which have the potential to harass marine mammals include impact and vibratory pile driving and vibratory pile removal. The terminal is located in southeast Alaska in Lutak Inlet.

To construct the new infrastructure, ADOT&PF will install 37 new piles (22 30-in. piles and 15 36-in. piles). Each pile will require 45 to 60 minutes of vibratory driving (to account for proper placement and alignment of the pile) followed by an average of 700 strikes (15 to 30 minutes) of the impact hammer for a total average installation time of 60-90 minutes. Pile driving the 30-in. piles is expected to take 11 days while an additional 8 days would be necessary to install the 36-in. piles. In addition, 4 existing 30-in. piles would be removed over the course of 2 days. In total, ADOT&PF would be elevating noise levels around the project area for 21 days (two days of pile removal plus 19 days of pile driving) of a 4 month construction window (four months from October 1, 2018, through September 30, 2019, excluding March 1, 2019, through May, 31 2019).

Comments and Responses

A notice of NMFS's proposal to issue an IHA to ADOT&PF was published in the *Federal Register* on October 13, 2017 (82 FR 47700). That notice described, in detail, ADOT&PF's activity, the marine mammal species that may be affected by the activity, the anticipated effects on marine mammals and their habitat, proposed amount and manner of take, and proposed mitigation, monitoring and reporting measures. During the 30-day public comment period, NMFS received one comment letter from the Marine Mammal Commission (Commission); the Commission's recommendations and our responses are provided here, and the comments have been posted online at:

www.nmfs.noaa.gov/pr/permits/incidental/construction.htm.

Comment 1: The Commission recommends that NMFS share the rounding criteria with the Commission in the near term.

Response: NMFS will share the rounding criteria with the Commission soon (following the completion of internal edits) and looks forward to discussing the issue with them in the future.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS Stock Assessment Reports (SAR; www.nmfs.noaa.gov/pr/sars/), and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS website (www.nmfs.noaa.gov/pr/species/mammals/). We provided a description of the specified activity in our *Federal Register* notice announcing the proposed authorization (82 FR 47700; October 13, 2017). Please refer to that document; we provide only a summary table here (Table 1).

Table 1. Marine mammals potentially present within Upper Lynn Canal During the Specified Activity.

Common name	Scientific name	MMPA Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance N _{best} , (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/ST ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
Humpback whale	<i>Megaptera novaeangliae</i>	Central North Pacific	E, D,Y	10,103 (0.3, 7,890, 2006)	83	24
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	<i>Orcinus orca</i>	Alaska Resident	-, N	2,347 (N/A, 2,347, 2012) ⁴	24	1
		Northern Resident	-, N	261 (N/A, 261, 2011) ⁴	1.96	0
		Gulf of Alaska, Aleutian Islands, Bering Sea	-, N	587 (N/A, 587, 2012) ⁴	5.9	1
		West Coast	-, N	243 (N/A,	2.4	0

		Transient		243, 2009) ⁴		
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Southeast Alaska	-, Y	975 (0.10, 896, 2012) ⁵	8.9	34 ⁵
Dall’s porpoise	<i>Phocoenoides dalli</i>	Alaska	-,N	83,400 (0.097, N/A, 1993)	Undet	38
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
Steller sea lion	<i>Eumetopias jubatus</i>	Western U.S.	E, D; Y	49,497 (2014)	297	233
		Eastern U.S.	-, D, Y	60,131 - 74,448 (2013)	1,645	92.3
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina richardii</i>	Lynn Canal/Stephens Passage	-, N	9,478 (8,605, 2011)	155	50

¹Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

²NMFS marine mammal stock assessment reports online at: www.nmfs.noaa.gov/pr/sars/. CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable (N/A).

³These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

⁴N is based on counts of individual animals identified from photo-identification catalogs.

⁵In the 2016 SAR for harbor porpoise, NMFS identified population estimates and PBR for porpoises within inland southeast Alaska waters (these abundance estimates have not been corrected for g(0); therefore, they are likely conservative). The Annual M/SI value provided is for all Alaska fisheries, not just inland waters of southeast Alaska.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

We provided a description of the anticipated effects of the specified activity on marine mammals in our *Federal Register* notice announcing the proposed authorization (82 FR 47700; October 13, 2017). Please refer to that document for our detailed analysis; we provide only summary information here.

The introduction of anthropogenic noise into the aquatic environment from pile driving and removal is the primary means by which marine mammals may be harassed from

ADOT&PF's specified activity. The effects of pile driving noise on marine mammals are dependent on several factors, including, but not limited to, sound type (*e.g.*, impulsive vs. non-impulsive), the species, age and sex class (*e.g.*, adult male vs. mom with calf), duration of exposure, the distance between the pile and the animal, received levels, behavior at time of exposure, and previous history with exposure (Southall *et al.*, 2007, Wartzok *et al.*, 2004). Animals exposed to natural or anthropogenic sound may experience physical and behavioral effects, ranging in magnitude from none to severe (Southall *et al.*, 2007). In general, exposure to pile driving noise has the potential to result in auditory threshold shifts (permanent threshold shift (PTS) and temporary threshold shift (TTS)) and behavioral reactions (*e.g.*, avoidance, temporary cessation of foraging and vocalizing, changes in dive behavior).

In 2016, ADOT&PF documented observations of marine mammals during pile driving and down-hole drilling at the Kodiak Ferry Dock (as described in 80 FR 60636; October 7, 2015 [date]). In the marine mammal monitoring report for that project (ABR 2016), 1,281 Steller sea lions were observed within the Level B disturbance zone during pile driving or drilling (*i.e.*, documented as Level B take). Of these, 19 individuals demonstrated an alert behavior, 7 were fleeing, and 19 swam away from the project site. All other animals (98 percent) were engaged in activities such as milling, foraging, or fighting and did not change their behavior. In addition, two sea lions approached within 20 meters of active vibratory pile driving activities. Three harbor seals were observed within the disturbance zone during pile-driving activities; none of them displayed disturbance behaviors. Fifteen killer whales and three harbor porpoise were also observed within the Level B harassment zone during pile driving. The killer whales were travelling or milling while all harbor porpoises were travelling. No signs of disturbance were noted for either of these species. Given the similarities in activities and habitat and the fact the

same species are involved, we expect similar behavioral responses of marine mammals to the specified activity. That is, disturbance, if any, is likely to be temporary and localized (*e.g.*, small area movements).

Marine Mammal Habitat Effects

We provided a description of the effect of specified activity on marine mammal habitat in our *Federal Register* notice announcing the proposed authorization (82 FR 47700; October 13, 2017). Please refer to that document; we provide only summary information here.

Construction activities at the Haines Ferry terminal could have localized, temporary impacts on marine mammal habitat and their prey by increasing in-water sound pressure levels and slightly decreasing water quality. ADOT&PF will employ standard construction best management practices (BMPs; see section 9 and 11.1 in ADOT's application), thereby, reducing any impacts. Any impacts are anticipated to be localized, short-term, and minimal.

Estimated Take

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

NMFS has authorized the taking of six species of marine mammals, by Level A and B harassment, incidental to pile driving and removal. Authorized takes will primarily be by Level B harassment, as use of the impact and vibratory hammers has the potential to result in

disruption of behavioral patterns and/or TTS for individual marine mammals. Impact pile driving may also result in auditory injury (Level A harassment) for mysticetes, high frequency cetaceans, and phocids based on modeled auditory injury zones if those species are exposed to certain noise levels generated from installing two piles per day. However, there are multiple hours between impact pile driving each pile; therefore, these zones are conservative as animals are not known to linger in the area. Therefore, PTS potential is low and, if occurs, would likely be minimal (*e.g.*, PTS onset). Auditory injury is not expected for mid-frequency species and otariids as the accumulation of energy does not reach NMFS' PTS thresholds. The death of a marine mammal is also a type of incidental take. However, as described previously, no mortality is authorized for this activity. Below we describe how the take were calculated.

We estimated take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals may be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities.

Acoustic Thresholds

Using the best available science, NMFS has developed acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 decibel (dB) re 1 microPascal (μ Pa) root mean square (rms) for continuous

(*e.g.* vibratory pile-driving, drilling) and above 160 dB re 1 μ Pa (rms) for non-explosive impulsive (*e.g.*, seismic airguns, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources. ADOT&PF includes the use of continuous (vibratory pile driving) and impulsive (impact pile driving); therefore, the 120 and 160 dB re 1 μ Pa (rms) thresholds are applicable.

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Technical Guidance, 2016) identifies dual criteria to assess auditory injury (Level A harassment) for five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive).

These thresholds were developed by compiling and synthesizing the best available science and soliciting input multiple times from both the public and peer reviewers to inform the final product, and are provided in Table 2. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2016 Technical Guidance, which may be accessed at: <http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm>.

Table 2. Thresholds identifying the onset of Permanent Threshold Shift.

	PTS Onset Acoustic Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 1</i> $L_{pk,flat}$: 219 dB $L_{E,LF,24h}$: 183 dB	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB
Mid-Frequency (MF) Cetaceans	<i>Cell 3</i> $L_{pk,flat}$: 230 dB $L_{E,MF,24h}$: 185 dB	<i>Cell 4</i> $L_{E,MF,24h}$: 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 5</i> $L_{pk,flat}$: 202 dB $L_{E,HF,24h}$: 155 dB	<i>Cell 6</i> $L_{E,HF,24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 7</i> $L_{pk,flat}$: 218 dB $L_{E,PW,24h}$: 185 dB	<i>Cell 8</i> $L_{E,PW,24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 9</i> $L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	<i>Cell 10</i> $L_{E,OW,24h}$: 219 dB
<p>* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.</p> <p><u>Note:</u> Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1 μPa²s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript “flat” is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (i.e., varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.</p>		

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds.

ADOT&PF prepared an acoustic modeling report that discusses their modeling approach and identifies modeled source levels and harassment zones for the Haines Ferry Terminal project

(Quijano *et al.*, 2016). A summary of the methods of the modeling effort is presented here; the full report is available at <http://www.nmfs.noaa.gov/pr/permits/incidental/construction.htm>.

To assess potential underwater noise exposure of marine mammals during pile driving, ADOT&PF used two models: a Pile Driving Source Model (PDSM) to estimate the sound radiation generated by the pile driver acting upon the pile (*i.e.*, source levels), and a Full Waveform Range-dependent Acoustic Model (FWRAM) to simulate sound propagation away from the pile. The modeling considered the effect of pile driving equipment, bathymetry, sound speed profile, and seabed geoacoustic parameters to predict the acoustic footprint from impact and vibratory pile driving of cylindrical pipe piles with respect to NMFS Level A and Level B thresholds. The report presents scenarios in which one pile or two piles are driven per day; however, for purposes here, NMFS considered only the two pile scenario since ADOT&PF has indicated that up to two piles could be driven per day. The resulting Level A harassment distances represent the location at which an animal would have to remain for the entire duration it takes to drive one pile, reset, and then drive another pile that, in reality, occurs over multiple hours in one day. The Level B isopleth distances represent instantaneous exposure to the Level B harassment criterion.

To model sounds resulting from impact and vibratory pile driving of 30-in and 36-in cylindrical pipe pipes, the PDSM was used in conjunction with GRL Engineer's Wave Equation Analysis Program (GRLWEAP) pile driving simulation software to obtain an equivalent pile source signature (*i.e.*, source level) consisting of a vertical array of discrete point sources (Table 3). This signature accounts for several parameters that describe the operation: pile type, material, size, and length; the pile driving equipment; and approximate pile penetration rate. The amplitude and phase of the point sources along the array were computed so that they collectively

mimicked the time-frequency characteristics of the acoustic wave at the pile wall that results from a hammer strike (impact driving) or from forced vibration (vibratory driving) at the top end of the pile. This approach estimates spectral levels within the band 10–800 Hz where most of the energy from pile driving is concentrated. An extrapolation method (Zykov *et al.*, 2016) was used to extend modeled levels in 1/3-octave-bands up to 25 kHz, by applying a –2 dB per 1/3-octave-band roll-off coefficient to the SEL value starting at the 800 Hz band. This was done to estimate the acoustic energy at higher frequencies to compare to NMFS thresholds.

Once the pile source signature was computed, the FWRAM sound propagation modeling code was used to determine received levels as a function of depth, range, and azimuth direction. FWRAM is a time-domain acoustic model that used, as input, the PDSM-generated array of point sources representing the pile and computes synthetic pressure waveforms. To exclude sound field outliers, NMFS uses the maximum range at which the given sound level was encountered after excluding 5 percent of the farthest such points ($R_{95\%}$) to estimate harassment threshold distances. To account for hearing groups, full-spectrum frequency-dependent weighting functions were applied at each frequency. The model also showed the transition from down-slope to up-slope propagation as the sound crosses Lutak Inlet, resulting in a sound field that decays at a constant rate with range.

Steel cylindrical pipe piles 41 m (135 ft) long with ½ in thick walls were modeled for a total penetration of 14 m (46 ft) into the sediment. In the case of vibratory pile driving, both pile sizes were assumed to be driven by an ICE-44B vibratory pile driver. For impact pile driving, the parameters corresponding to the Delmag D30-32 and D36-32 impact pile drivers were used to model scenarios with 30-in and 36-in diameter piles, respectively. Sound energy was accumulated over a specified number of hammer strikes, not as a function of time. The number

of strikes required to install a single pile (assumed to be 700 strikes per pile) was estimated based on pile driving logs from another pile driving project at Haines. Sound footprints were calculated for the installation of two piles (thus, accumulated over 1400 strikes). For vibratory pile driving, sound energy was accumulated for the two piles that could be installed or removed in a 24-hour period.

Modeled source levels and distances to NMFS acoustic thresholds based on these source levels and the sound propagation model are presented in Table 3 and 4.

Table 3. Impact Pile Driving: Modeled Source Levels and Harassment Zones for Impact Driving Two Piles per Day. A dash indicates the threshold was not reached*.

Hearing Group	Level A threshold Distance (R95%) (km)	Level A threshold area (km ²)	Level B (160 dB) threshold distance (km)	Level B threshold area (km ²)
30 inch piles: modeled SL = 179.5 dB SEL				
Low-frequency cetacean	1.65	3.17	1.98	4.52
Mid-frequency cetacean	-	-		
High-frequency cetacean	1.45	1.13		
Phocid pinniped	0.26	0.09		
Otarrid pinniped	-	-		
36 inch piles: modeled SL = 180.9 dB SEL				
Low-frequency cetacean	2.04	4.78	2.67	6.79
Mid-frequency cetacean	-	-		
High-frequency cetacean	1.49	2.17		
Phocid pinniped	0.33	0.15		
Otarrid pinniped	-	-		

*NMFS also considers peak sound pressure levels; however, in no case were these thresholds reached or greater than the SEL distances.

Table 4. Vibratory Pile Driving: Modeled Source Levels and Harassment Zones for Vibratory Driving Two Piles per Day. A dash indicates the threshold was not reached*.

Hearing Group	Level A threshold Distance (R95%) (km)	Level A threshold area (km ²)	Level B (120 dB) threshold distance (km)	Level B threshold area (km ²)
30 inch piles: modeled SL = 177.6 dB rms				
ALL	-	-	5.61	21.14
36 inch piles: modeled SL = 179.8 dB rms				
Low-frequency cetacean	0.02	<0.01	5.62	21.17
Mid-frequency cetacean	-	-		
High-frequency cetacean	-	-		
Phocid pinniped	-	-		
Otarrid pinniped	-	-		

*NMFS also considers peak sound pressure levels; however, in no case were these thresholds reached or greater than the SEL distances.

The modeling approach described above and in ADOT&PF's application constitutes a new approach in that it models both source levels and propagation loss to estimate distances to NMFS harassment thresholds. Some preliminary data comparing measured sound levels to those produced by the models has been presented, but no peer reviewed analysis has been undertaken. To test the validity of the model, NMFS has included a proposed requirement that ADOT&PF conduct a source source verification (SSV) study upon the onset of pile driving to validate the model or, if necessary, adjust the harassment zones based on measured data. This SSV study will also provide the first measurements of sound levels generated by 36-in piles driven by ADOT&PF. ADOT&PF has prepared a draft acoustic monitoring plan which can be found at www.nmfs.noaa.gov/pr/permits/incidental/construction.htm. We welcome comments on the ADOT&PF's source level modeling approach and the acoustic monitoring plan.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

The data on marine mammals in this area are diverse and fairly robust due mostly to ADF&G surveys. Strong seasonal occurrence of marine mammals in this area is well documented; therefore, density estimates for each species were calculated by month rather than averaged throughout the year. For example, we have already discussed the seasonality of Steller sea lions and how prey aggregations affect their abundance. Monthly Steller sea lion densities were calculated based on abundance surveys conducted at Gran Point (ADF&G, pers. comm). Considering the Steller sea lion data used to calculate density is from Gran Point, ADOT&PF used this location to mark the southern boundary of the action area. The area from Gran Point north that encompasses Lutak Inlet and Lynn Canal is 91.3 km²; this area was used for all species' density estimates. For species other than Steller sea lion, average sighting rate was used to calculate density (*i.e.*, species occurrence rate per month/ 91.3km²). Harbor seals are generally present in the action area throughout the year, but their local abundance is clearly defined by the presence of available prey. During mid-March through mid- June, they are abundant in Lutak Inlet. For these months, an average of 100 seals per day in the inlet is considered a conservative estimate. For all other months, an estimate of 10 seals per month was incorporated into the density equation. Humpback whales are present in the action area from mid-April through June at a rate of five whales per month and given that a few whales have atypically remained in the area through the fall months (MOS 2016), we assumed two whales may remain within the action area from August through November. Densities for killer whales were calculated assuming five animals enter the area seasonally from one of the resident or transient stocks, and may remain from April through November. Harbor porpoise may be present

in low numbers (average of five per month) throughout the year. Finally, Dall's porpoise are not sighted very frequently but tend to travel in larger groups; therefore, ten animals per for the four months of construction were considered in the density calculations. Table 5 provides the resulting marine mammal densities for months when terminal construction would occur (again, no pile activities would occur from March 1 through May 31 to avoid peak marine mammal abundance and critical foraging periods). Although the table provides all relevant months, we used the months with highest density to calculate estimated take for each species, thus producing the most conservative estimates. Please refer to section 6.6.1 in ADOT's application for supporting data information.

Table 5. Marine Mammal Density Estimates (Animals/km²) During Months When Pile Activities May Occur.

Species	Jan	Feb	June	July	Aug	Sept	Oct	Nov	Dec
Steller sea lion	2.06	1.87	7.65 ¹	1.35	0	0.01	1.85	1.59	2.47
Harbor seal	0.109	0.109	1.09	0.109	0.109	0.109	0.109	0.109	0.109
Humpback whale	0	0	0.054	0.054	0.022	0.022	0.022	0.022	0
Killer whale	0	0	0.054	0.054	0.054	0.054	0.054	0.054	0
Harbor porpoise	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054
Dall's porpoise ²	0	0	0	0.11	0.11	0.11	0.11	0	0

¹The application and proposed IHA *Federal Register* notice incorrectly calculated a density of 7.55. No change to Steller sea lion takes result from this correction.

²For all months where Dall's porpoise may be present (July through October), the application and proposed IHA *Federal Register* notice incorrectly calculated a density of 0.03. Because Dall's porpoise take numbers are based on group size, this density increase warranted an increase to the number of groups, and therefore the number of takes, potentially exposed to noise about NMFS acoustic thresholds (see Table 6).

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

The following equation was used to calculate potential Level A take per species per pile type: *Level A harassment zone/pile type * June density * # of pile driving days/pile type.*

Also for Level B takes, we only considered the vibratory zone of 21.1 km^2 . In the proposed IHA notice, we had included calculations for the Level B harassment zone from impact pile driving but have since determined that this grossly overestimates take as the Level B zone for vibratory pile driving and removal essentially subsumes the Level B zone for impact hammering. As such, our Level B takes for all species, except those which are based on group size, are reduced from the proposed IHA notice stage.

As described above, there would be 19 days of pile driving and 2 days of pile removal for a total of 21 pile activity days. We used the June density because, when densities changed throughout the year, this is when the highest density of all species occurs in the project area within the project in-water work window (with the exception of Dall's porpoise-see below) and ADOT&PF could conduct activities during this month. Therefore, the resulting take estimates assume all work is conducted in June, producing conservative estimates.

ADOT&PF may take 1.9 humpback whales by Level A harassment when impact driving 30" piles (*i.e.*, $3.17 \text{ km}^2 * 0.054 \text{ animals/km}^2 * 11 \text{ days}$). ADOT&PF may take 2.1 humpback whales by Level A harassment when impact driving 36-in piles (*i.e.*, $4.78 \text{ km}^2 * 0.054 \text{ animals/km}^2 * 8 \text{ days}$). Together, these equal 4 (*i.e.*, 1.9 from 30-in + 2.1 from 36") potential Level A takes (Table 6). However, humpback whales may travel in small groups (up to four animals per group); therefore, in the IHA we doubled this number to account for two groups of humpback whales for a total of eight Level A takes. Potential Level B takes from vibratory pile driving and removal (Level B area = 21.1 km^2) was calculated using the equation described above: $21.1 \text{ km}^2 * 0.054 \text{ animals/km}^2 * 21 \text{ days} = 24 \text{ animals}$. The IHA authorizes 24 Level B takes of humpback whales.

For killer whales, Level B takes from vibratory pile driving were calculated using June density and the full 21.1 km² Level B: $21.1 \text{ km}^2 * 0.054 \text{ animals/km}^2 * 21 \text{ days} = 24 \text{ animals}$. However, the density used in the equation used in ADOT&PF's application was based on transient killer whale average group size of 4-6 animals when a resident group can average 20 animals. Therefore, the IHA authorizes a total of 60 takes of killer whales to account for larger resident groups passing through the Level B harassment zone.

For Dall's porpoise, we increased the number of groups that may be within the calculated Level A thresholds area from one group in the proposed IHA notice to two groups to account for the increase in estimated density. We also increase the number of groups potentially exposed to noise levels about the Level B threshold to four groups. For Level B take, calculated take between 10 and 20 animals; therefore, we assumed two groups of ten each may occur within the Level B zone and are proposing to authorize 20 Level B takes.

Harbor porpoise take estimates were based on a density of .054 porpoise/km² with a Level A isopleth of 1.13 km² and 2.17 km² for impact pile driving 30-in (11 days) and 36-in (8 days) piles, respectively. The resulting one take is less than the average group size of three animals. Further, harbor porpoise are cryptic species and could enter the Level A zone unnoticed during impact pile driving. Therefore, the IHA authorizes six Level A takes of harbor porpoise to account for missing animals. Level B take numbers for harbor porpoise were based on the conservative assumption four groups of porpoise could be exposed to noise levels at or above the Level B vibratory pile driving threshold for a total of 12 takes.

Harbor seals may linger in the area for multiple days; therefore, we conservatively estimate one harbor seal could be around the terminal on any given day for a total of 21 Level A takes. For Level B takes, we used the equation above using a density of 1.09 seals/km². It is

important to note that given harbor seals are more likely to haul-out and linger within the Level A and B harassment zone, it is more likely the take numbers represent exposures and not individual seals. As with all other species, it is also likely animals will travel through the Level B zone heading up the inlet and then back down again. Because individual identification is not always possible, these separate sighting events would be counted as individual takes.

For Steller sea lions, no Level A takes are authorized. Level B takes from vibratory pile driving were calculated using the most conservative June density (assuming worst case scenario that all work occurs in June) and the full 21.1 km² Level B zone since no Level A takes are predicted: 21.1 km² * 7.65 animals/km² * 21 days = 3390 animals. Similar to harbor seals, this amount is not believed to be the number of individual Steller sea lions harassed but some lesser amount of individuals with repeated exposures.

Table 6 includes the total proposed take levels, by species, manner of taking, and the percentage of stock potentially taken by harassment.

Table 6. Estimated take by Level A and Level B harassment, by species and month, resulting from impact and vibratory pile driving.

Species	Stock	Stock size ¹	Level A	Level B	% of Stock
Steller sea lion	eastern U.S.	60,131	0	3307 ²	5.5
	western U.S.	49,497	0	83 ²	0.17
Harbor Seal	Lynn Canal/Stephens Passage	9,478	21	483	5.3
Humpback whale	Central North Pacific	10,103	4 ³	24 ³	0.3
Killer whale	Alaska Resident	2,347	0	60	2.6-24.7 ⁴
	Northern Resident	261	0		
	Gulf of Alaska, Aleutian Islands, Bering Sea	587	0		
	West Coast Transient	243	0		
Harbor porpoise	Southeast Alaska	975	6 ⁵	24	3.08
Dall's porpoise	Alaska	83,400	20 ⁵	48 ⁵	0.08

¹ Stock size is N_{best} according to NMFS 2016 Stock Assessment Reports.

² Calculated Level B take of all SSL's is based on a June density of 7.65 animals which equals 3390 individuals. We then subtracted the 83 animals which could belong to the western U.S. stock based a 2 percent distinction factor calculated from takes estimated in the proposed IHA *Federal Register* notice.

³ Calculated Level A takes for humpback whales did not cover average group size; therefore, we are authorizing four takes. For ESA section 7 consultation purposes, 6.1 percent are designated to the Mexico DPS and the remaining are designated to the Hawaii DPS; therefore, we predict 2 Level B takes from the Mexico DPS.

⁴ The percentages calculated here assume all 60 takes are from a single stock. It is unlikely all takes would be from the West Coast Transient stock; therefore, the percentage of the population taken is likely a gross overestimate.

⁵ The calculated Level A take for harbor porpoise and Dall's porpoise is less than the average group size; therefore, we are proposing to authorize Level A take of two groups of each species (*i.e.*, 6 and 20 animals, respectively). The calculated amount of Level B take for harbor porpoise is sufficient to cover multiple groups; therefore, we used the take equation.

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

1) the manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat, as well as subsistence uses. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if

implemented as planned) the likelihood of effective implementation (probability implemented as planned); and

2) the practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are included in the IHA:

- *Schedule*: No pile driving or removal would occur from March 1 through May 31 to avoid peak marine mammal abundance periods and critical foraging periods. In addition, the daily construction window for pile removal and driving shall begin no sooner than 30 minutes after sunrise and shall end no later than 30 minutes prior to sunset;
- *Pile Driving Delay/Shut-Down*: If an animal comes within 10 m (33 ft) of a pile being driven or removed, ADOT&PF would shut down. Pile driving activities would only be conducted during daylight hours when it is possible to visually monitor for marine mammals. If poor environmental conditions restrict visibility (*e.g.*, from excessive wind or fog, high Beaufort state), pile installation would be delayed. If a species for which authorization has not been granted or if a species for which authorization has been granted but the authorized takes are met, ADOT&PF would delay or shut-down pile driving if the marine mammals approaches or is observed within the Level A and/or B harassment zone. In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as serious injury or mortality, the protected species observer (PSO) on watch would immediately call for the cessation of the specified activities and immediately report the incident

to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and NMFS Alaska Regional Office;

- *Soft-start:* For all impact pile driving, a “soft start” technique will be used at the beginning of each pile installation to allow any marine mammal that may be in the immediate area to leave before hammering at full energy. The soft start requires ADOT&PF to provide an initial set of three strikes from the impact hammer at 40 percent energy, followed by a one-minute waiting period, then two subsequent 3–strike sets. If any marine mammal is sighted within the Level A zone designated for that species prior to pile-driving, or during the soft start, ADOT&PF will delay pile-driving until the animal is confirmed to have moved outside and on a path away from Level A zone or if 30 minutes have elapsed since the last sighting of a humpback whale or 15 minutes have elapsed since the last sighting of any other marine mammal species; and

- *Other best management practices:* ADOT&PF will drive all piles with a vibratory hammer to the maximum extent possible (*i.e.*, until a desired depth is achieved or to refusal) prior to using an impact hammer; use the minimum hammer energy needed to safely install the piles; utilize sound attenuation devices (*e.g.*, pile caps/cushions) to reduce source levels and, by association, received levels; and remove piles using a direct pull method instead of a vibratory hammer, if feasible.. It is noted that although sound attenuation devices have proven effective at reducing source levels, because the actual amount of reduction of sound energy from using those devices is unknown, ADOT&PF and NMFS relied on unattenuated source levels to calculate harassment zones.

Based on our evaluation of the applicant’s proposed measures, as well as other measures considered by NMFS, we have determined that the proposed mitigation measures provide the

means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of:
(1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;

- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Visual Monitoring

Monitoring would be conducted 30 minutes before, during, and 30 minutes after pile driving and removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes.

A primary PSO would be placed at the terminal where pile driving would occur and a second observer would be placed at Tanani Point, located approximately 1 mi (1.6 km) southeast of the terminal. This second observer is at an advantage to observe species prior to entering the Level A zone as they move up Chilkoot Inlet, covering a majority of the Level B zone. PSOs would scan the waters using binoculars, and/or spotting scopes, and would use a handheld GPS or range-finder device to verify the distance to each sighting from the project site. All PSOs would be trained in marine mammal identification and behaviors and are required to have no other project-related tasks while conducting monitoring. The following measures also apply to visual monitoring:

(1) Monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay

procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

(a) Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;

(b) Advanced education in biological science or related field (undergraduate degree or higher required);

(c) Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);

(d) Experience or training in the field identification of marine mammals, including the identification of behaviors;

(e) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;

(f) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and

(g) Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

A draft marine mammal monitoring report would be submitted to NMFS within 90 days after the completion of pile driving and removal activities. It will include an overall description

of work completed, a narrative regarding marine mammal sightings, and associated marine mammal observation data sheets. Specifically, the report must include:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (*e.g.*, percent cover, visibility);
- Water conditions (*e.g.*, sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Locations of all marine mammal observations; and
- Other human activity in the area.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury, serious injury or

mortality, ADOT&PF would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinator. The report would include the following information:

- Description of the incident;
- Environmental conditions (*e.g.*, Beaufort sea state, visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with ADOT&PF to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. ADOT&PF would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that ADOT&PF discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.*, in less than a moderate state of decomposition as described in the next paragraph), ADOT&PF would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with ADOT&PF to determine whether modifications in the activities are appropriate.

In the event that ADOT&PF discovers an injured or dead marine mammal and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), ADOT&PF would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinator, within 24 hours of the discovery. ADOT&PF would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Acoustic Monitoring

ADOT&PF relied on source level and sound propagation models to estimate Level A and harassment zones. To validate the outputs of these models, ADOT&PF will conduct acoustic monitoring during the first two days of pile driving. The acoustic monitoring plan is available for review at <http://www.nmfs.noaa.gov/pr/permits/incidental/construction.htm>. In summary, ADOT&PF will deploy three bottom-mounted Autonomous Multichannel Acoustic Recorders (AMARs) and conduct spot measurements with a hydrophone over the side of a vessel. The AMARs will be set 10 m, 1000m and 5,000 m from the pile. Within one week, ADOT&PF will provide NMFS a report of their acoustic measurements. NMFS will review the report and if empirical data demonstrates adjustments to Level A and B take zones are warranted, those adjustments will be made.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the

species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

The Level A harassment zones identified in Tables 3 and 4 are based upon an animal exposed to impact pile driving two piles per day. Considering duration of impact driving each pile (up to 15 minutes) and breaks between pile installations (to reset equipment and move pile into place), this means an animal would have to remain within the area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement throughout the area. If an animal was exposed to accumulated sound energy, the resulting PTS would likely be small (*e.g.*, PTS onset) at lower frequencies where pile driving energy is concentrated. Nevertheless, we propose authorizing a small amount of Level A take for four species which is considered in our analysis.

Behavioral responses of marine mammals to pile driving and removal at the Terminal, if any, are expected to be mild and temporary. Marine mammals within the Level B harassment zone may not show any visual cues they are disturbed by activities (as noted during modification to the Kodiak Ferry Dock) or could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the short duration of noise-generating activities per day and that pile driving and removal would occur on 21 days across 4 months, any harassment would be temporary. In addition, ADOT&PF would not conduct pile driving or removal during the spring eulachon and herring runs as well as the fall salmon runs, when marine mammals are in greatest abundance and engaging in concentrated foraging behavior.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality is anticipated or authorized.
- ADOT&PF would avoid pile driving and removal during peak periods of marine mammals abundance and foraging (*i.e.*, March 1 through May 31 eulachon and herring runs,).
- ADOT&PF would implement mitigation measures such as vibratory driving piles to the maximum extent practicable, soft-starts, use of sound attenuation devices, and shut downs.
- Monitoring reports from similar work in Alaska have documented little to no effect on individuals of the same species impacted by the specified activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS finds that the total marine mammal take

from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS proposes to authorize is 0.03 to 12.3 percent of any stock's best population estimate. The 12.3 percent is based on the possibility all 30 takes of killer whales are from the West Coast Transient stock (population size 243) which is highly unlikely. The next lowest percent of stock is for the Steller sea lion eDPS at 6.7 percent; however, this is also conservative because it assumes all pile driving occurs in June which has the highest Steller sea lion density and assumes all takes are of individual animals which is likely not the case. Harbor seal takes represent 6.3 percent of the Lynn Canal/Stephens passage population while takes for the remaining five species, including the Steller sea lion wDPS, represent less than 1 percent of all stocks.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. § 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally, in this case with NMFS Alaska Protected Resources Division Office, whenever we propose to authorize take for endangered or threatened species.

On October 20, 2017, NMFS Alaska Region issued a Biological Opinion to NMFS Office of Protected Resources and the Federal Highway Administration which concluded the Terminal Modification Project is not likely to jeopardize the continued existence of WDPS Steller sea lions or Mexico DPS humpback whales or adversely modify critical habitat because none exists within the action area.

Authorization

NMFS has issued an IHA to ADOT&PF for the potential harassment of small numbers of six marine mammal species incidental to pile driving and removal activities in Lutak Inlet, provided the previously mentioned mitigation, monitoring and reporting requirements are incorporated.

Dated: January 31, 2018.

Donna Wieting, Director,

Office of Protected Resources,

National Marine Fisheries Service.

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